

Middle Articles

CONTEMPORARY THEMES

Is Screening for Cancer Worth While? Results from a Well-woman Clinic for Cancer Detection

J. B. DAVEY,* M.B., B.S., D.M.R.T. ; W. P. GREENING,† F.R.C.S. ; J. A. MCKINNA,‡ M.B., B.S.C., F.R.C.S.

British Medical Journal, 1970, 3, 696-699

Summary: 1,768 women were screened for breast and cervical cancer in the year May 1968 to April 1969. Clinical examination followed the completion of a simple questionnaire. Investigations included thermography and mammography of the breast and cytology of the cervical and vaginal smears. Breast cancer was detected in 15 patients (0.85% or 8.5 per 1,000) and none was aware of any abnormality though 13 of the tumours were clinically palpable. Carcinoma in situ of the cervix was found in a further eight (0.45% or 4.5 per 1,000).

Introduction

While the annual death rate in Britain includes some 10,000 women with breast cancer and a further 3,000 with cervical cancer it would seem important to direct efforts towards the earlier diagnosis of both diseases, especially since there is little change or improvement in mortality rates (Cutler and Connelly, 1969). Differences of opinion have arisen about the existence or definition of an "early" stage in breast cancer (Brooke, 1968; Greening and Harmer, 1969), but it is well established that the prognosis for an individual will depend on such factors as the size and malignancy of the primary tumour and on the extent of spread at the time of first treatment (Bloom, 1950; Robbins and Berg, 1964).

The purpose of screening is to discover those among the apparently well who are suffering, in fact, from a particular disease (Wilson and Jungner, 1968), and its value has been questioned in relation to the detection of cancer or other incurable diseases (Whirby, 1968). Without full epidemiological surveys in controlled population groups it would be difficult to prove that those women who have been discovered in this clinic to have cancer will have a better prognosis than a similar group presenting in an outpatient clinic. Nevertheless, the preponderance of Stage I carcinoma of the breast and of in-situ cervical carcinoma in these women is striking. They may fare no better than others in a similar stage, but their outlook may well be improved than if they had waited until the disease was clinically manifest.

Non-invasive in-situ cervical carcinoma may be compared to lobular carcinoma of the breast rather than to clinical but asymptomatic breast cancer, and they are found in different sections of the female population. The aims of a screening programme, however, must include the end result of a "shift to the left" in the eventual stage distribution of a group of treated patients.

Patients

A clinic for exfoliative cytology has been in existence at this hospital since 1966, and in 1967 all those attending for cervical smear were offered a breast examination. Patients come by appointment to clinics held three times each week and a letter of introduction is not required from their doctors, though some practitioners do refer patients by letter or recommend them to attend. The widespread "advertisement" of the importance of a cervical smear test brings many women to the clinic, and growing public support can be associated with the extra benefit of the breast examination. This is measured by the attendance of 1,400 women in 1968 and some 2,500 in 1969, with a resulting wait of six to eight weeks for an appointment. This is too long and may deter from attendance those women who act on impulse.

Social investigators of the department of clinical research have classified the patients according to their occupation (or that of their husband), and the distribution is shown in Table I for 1,238 women seen in the period studied, from May 1968 to April 1969. The predominance of higher groups is due

TABLE I.—*Socio-economic Status in 1,238 Women*

Social class	I	II	III	IV	V	Armed Forces
No. of patients	248	510	396	47	25	12

partly to the area in which the hospital is situated. The local authority advised householders of the clinic's existence. It is well known that ways are needed to attract women from the lower socio-economic groups in order to increase the detection rate of cervical cancer (Lawson, 1957).

Investigations

History.—A brief questionnaire relating to gynaecological and breast symptoms and general medical and family history is completed by the medical officer.

Clinical.—Abdominal and pelvic examination is carried out by a gynaecologist. Cervical and vaginal smears are taken and, when indicated, swabs of the vaginal secretions. A second medical officer completes the clinical assessment by examination of the breasts.

Pathological.—Routine cytological examination is made of the smears and the swabs cultured. All patients have a haemoglobin estimation.

Thermography.—Temperature scanning of the breasts is carried out with an infra-red detector (Pyroscan). For this examination patients are unclothed to the waist and sit for 10 minutes in an air-conditioned room at 19°C. The scan then takes about five minutes and produces an instant record. Further information is recorded by mea-

* Clinical Assistant, Department of Clinical Research and Breast Unit.

† Director of the Breast Unit.

‡ Senior Surgical Registrar.

The Royal Marsden Hospital, London S.W.3.

surement of skin temperature with thermistor probes and infra-red photography.

Mammography.—This is not used routinely at present because of the limited resources of radiographic time and staff. It is reserved for patients with a clinical abnormality in the breast (a lump or nodularity) and for women with large breasts where clinical examination can miss small lesions and where thermography has been difficult to assess.

The length of the visit to the clinic is about one hour and a half. Patients whose investigations are all normal are encouraged to return annually. Those with any breast abnormality are reviewed again clinically within one to two weeks, and this review is made usually by a surgeon and a medical officer together. The results of all the investigations are sent to the general practitioner. When necessary advice is offered about the need for further investigation (such as surgical biopsy) or further specialist opinion, and the patient is encouraged to return to her doctor to discuss this.

Results

In the year May 1968 to April 1969 1,768 women were seen at the well-woman clinic. Most were being seen in this way for the first time, many had had a previous cervical smear at this or another clinic, and a minority were returning from the previous year.

Questionary

Family History.—A history of cancer in the patient's immediate family was reported by 674 women and of these 284 (16%) gave a history of maternal breast cancer. Of the 15 women discovered to have breast cancer seven gave a history of breast carcinoma in near relatives—two being in their mothers.

Previous History.—Of the 15 patients with breast cancer three gave a history of previous "mastitis," but only one had had breast surgery for a benign lesion.

Breast Symptoms.—Premenstrual breast discomfort was often reported, but other symptoms were uncommon. Some of those with nodular breast dysplasia complained of localized discomfort or pain.

Self-examination.—This was practised by about one-third of all women, and most came from the higher socio-economic groups. Few had a particular technique and it was rarely timed in relation to their period cycle. Many women asked for instruction, but time in the clinic is limited so that leaflets on the subject are now distributed.

Oral Contraceptives.—At some time 417 (23%) had taken "the pill," and 293 (16%) were taking it at the time of their attendance. Only half of the women knew the name of the pill which they were taking, and this makes it impossible to draw any conclusions relating to the hormonal type used.

Clinical Examination

The clinical findings were normal in 1,066 of the 1,768 patients examined. Many women have areas of diffuse nodularity in one or both breasts, and this group included 549 such women (31%). A total of 153 women (8.7%) had localized areas of nodularity which were firmer than the surrounding breast or had discrete tumours, and seven of these were clinically malignant. Ten were cystic, and therapeutic aspiration confirmed the diagnosis and relieved the patients' anxiety. Cytology of the fluid obtained did not show malignant cells.

As a result of this examination and other investigations 88 of these 153 women were admitted to hospital for biopsy of palpable lesions. Fifteen proved to be malignant and the remainder were a variety of the different types of benign mammary dysplasia. The nodularity could not always be

related to the premenstrual phase, but it was noted in half the women taking oral contraceptives; it usually disappeared within three months of stopping the pill in those who were willing to do so. Surgical biopsy of the breast in seven women taking the pill yielded two cancers and four examples of fibroadenosis and one of frank cystic hyperplasia.

Thermography

Of the 1,717 thermograms recorded 197 showed abnormal heat patterns, and these included 11 of the malignant cases. The variety of patterns seen have been discussed (Draper and Jones, 1969), but suspicion is aroused by the observation of a diffuse heat pattern associated with a local rise in skin temperature of more than 1.5°C., especially if this is not associated with prominent veins. The thermograms of the 549 patients with nodular breast disease were subdivided into three categories: normal (374), equivocal (110), and suspicious (65). This led to recall of the patient for further clinical examination and mammography (where not already done). Two carcinomas were detected by this method.

Mammography

The 561 women whose breasts were examined radiologically included those with palpable lumps, many of those with nodularity, those with large breasts, and those with abnormal thermograms. Seventeen suspicious mammograms were seen, including 10 of those with malignant disease. In one of these the method of detection was by mammography—the radiological tumour of 0.5 cm. could not be felt. Difficulties in interpretation were more common in women taking oral contraceptives, contrary to the experience of Bilbao (1968).

Breast Cancer

Fifteen women were found to have breast cancer and 13 of these were clinically stage I without palpable axillary nodes (T1 or T2 NO MO). One had palpable nodes (stage II or T2 N1 MO) and the other patient had a larger tumour with involvement of local skin and axillary nodes (stage III or T3 N2 MO). Thirteen were treated at this hospital and two elsewhere. Twelve of those with stage I disease were treated by mastectomy after excision biopsy of the tumour and frozen section confirmation of the diagnosis. In two patients with diffuse nodularity a biopsy was performed because of a very suspicious thermogram: one of these had a small scirrhous tumour and subsequently underwent mastectomy and the other had a small area of invasive intraduct carcinoma. This patient refused mastectomy. Simple mastectomy was performed for one lobular carcinoma and for one intraduct carcinoma.

The axillary lymph nodes were examined in 10 of these 13 cases and all were histologically negative, thus confirming the

TABLE II.—*Patients With Breast Cancer*

Case No.	Stage	Type	Grading	
			Bloom	Hamlin
1	I	Intraduct	—	—
2	I	Polygonal	II	D—
3	I	Adenocarcinoma	I	D—
4	I	Polygonal	II	D+
5	I	Intraduct	—	—
6	I	Adenocarcinoma	II	D—
7	I	Intraduct	II	D+
8	I	Adenocarcinoma	I	D+
9	III	Polygonal	II	D+
10	I	Lobular	I	Not gradable
11	I	Adenocarcinoma	I	D—
12	II	Polygonal	II	D—
13	I	Polygonal	I	D+
14	I	Polygonal	Not gradable	Not gradable
15	I	Adenocarcinoma	I	D+(no nodes)

clinical staging. The nodes of the stage II case were positive, and this patient was given radiotherapy after radical mastectomy. External irradiation was used in the patient with a stage III tumour after local excision biopsy of the growth.

The pathological types of tumour in relation to clinical staging are given in Table II. The degree of malignancy has been graded where possible (Bloom, 1950) and the histological evidence of the host defence response is recorded (Hamlin, 1968).

Cervical Cytology

In this group 14 abnormal smears were found and all these women had cone biopsies as a result. Eight of these showed carcinoma in situ and five showed dysplasias. One result has not been traced. Treatment at this hospital is limited to cone biopsy if the patient is in the reproductive age group unless follow-up smears show any abnormality.

The benign clinical findings are of interest, and in a similar group of 1,294 women screened in 1968 vaginal examination was abnormal in 279. In 185 of these women a cervical erosion was found; cervical polyps (30), uterine fibroids (30), and cervicitis (16) were the next common findings. Ten women had a subtotal hysterectomy and eight were found to have ovarian cysts. Inflammatory changes are commonly seen during cytological examination and 225 of these smears were so affected; these were mostly due to monilial or trichomonal infections.

Discussion

The early detection of cancer can be equated with simpler treatment and fewer failures (U.I.C.C., 1969). The fact that this may not be true for all cancers should be used as a stimulus to improve our methods of diagnosis and treatment and not as an argument against sensible and useful detection procedures (Phillips, Boyes, and Patterson, 1969). Proof of the value of screening programmes requires large numbers of patients with suitable control and several years of follow-up. Regular six-monthly chest *x*-ray examinations by the Mass Radiography Service in three of the Metropolitan regions have discovered a group of patients with lung cancer whose operability rate is better than that of a control group screened at longer intervals. Their survival is improved, but the size of the group is too small to influence mortality figures (Brett, 1968, 1969; Nash *et al.*, 1968).

A controlled screening trial for breast cancer has been started in New York, and the hope that survival will be improved is encouraged by the higher incidence of tumours of low malignancy in the screened group, together with an increased frequency of uninvaded axillary lymph nodes (Strax *et al.*, 1967). The incidence of invasive cervical carcinoma has fallen in British Columbia since the introduction there in 1949 of exfoliative cytology (Boyes *et al.*, 1962), but the causal relationship may take years to prove, though current world opinion supports cervical cytology as a proved method of screening for pre-symptomatic disease (U.I.C.C., 1969; World Health Organization, 1969). In particular, the high-risk group of women for cervical carcinoma in situ are probably up to 20 years younger than those with clinically manifest carcinoma of the cervix; they come from lower socio-economic groups and have had an early start to an active sex life.

Simultaneous screening for breast and cervical cancer has been criticized on the grounds that the former is rarely in situ (or asymptomatic) and that it occurs in women of high social status and low parity, the reverse of conditions prevailing for women with cervical cancer. There is, however, some overlap of the two conditions in the middle of the social structure (Wakefield, 1968).

Clinical examination of the breasts is the most useful part

of screening for breast cancer and it should be practised as a routine in all clinical examinations. It is relatively simple and the yield is adequate (Barnes *et al.*, 1968). In this small series thermography led to the detection of cancer in two patients with nodular breast disease—when this is diffuse clinical examination can be very difficult. It is a simple and quick test without *x*-ray hazard which can detect palpable lesions (Freundlich *et al.*, 1968; Isard *et al.*, 1969), and if menstrual variations are allowed for it remains fairly constant for one individual. Its value is therefore twofold—in raising the “index of suspicion” in nodular breast disease and in follow-up screening.

Mammography has been shown by many to be a useful screening test for breast cancer (Stevens and Weigen, 1966; Gershon-Cohen *et al.*, 1967; Strax *et al.*, 1967), but it may be less effective under the age of 50 (Gresbach and Eade, 1966). It is time-consuming and expensive and there are few departments in this country with adequate resources of staff, apparatus, and time to apply it to all women. As with thermography technique and interpretation are important, but in this group it led directly to the detection of one carcinoma and confirmed nine others.

An annual visit to the clinic is currently advised, but the numbers who actually return are disappointingly low, both to this clinic and in the New York survey. With increasing numbers of new attenders the follow-up screening should be restricted to “high-risk” groups and more attempts should be made to attract women from such groups in the first place. For breast cancer these include: (1) women over the age of 35, (2) those with a family history of breast cancer, (3) single or nulliparous women, and (4) those with a history of previous breast disease (Dunn, 1969).

Other possible groups might include those with an abnormal thermogram and those taking oral contraceptives for more than (an arbitrary) two years. One important high-risk group is women with a history of treated breast cancer—they are excluded from a well-woman clinic but must be screened in the regular follow-up clinic. The rate of cancer detection in this group seems adequate and the yield is higher than in some (Raphael, 1967). This may be related to high numbers in the high-risk groups. The clinic's services utilize a variety of outpatient department facilities and its cost is difficult to estimate. Nevertheless, the cost of treatment of each breast cancer by surgery alone must be less than that in more advanced cases with combined modes of therapy and longer attendance as an inpatient and outpatient. The cases therefore cost less to treat and carry a better prognosis.

Our own clinic is supported by the local borough council, and it may be that local health authorities should consider urgently the provision of clinics of this type in conjunction, for example, with infant welfare and family planning. Mobile clinics are used in Scandinavia and British Columbia, but in Britain the expansion of interest and facilities in existing health centres should be encouraged, together with the use of general practitioners in their operation. Some undertake such work already (Cranswick, 1967), and others might value the opportunity of access to a clinic with ancillary services.

Screening programmes demand that facilities exist for adequate and rapid management of patients who may require minor breast or gynaecological surgery in order to confirm or refute clinical suspicion and to allay the patients' anxiety. We have encountered only one overt case of cancerphobia and rather than the existence of the clinic being harmful in this respect it is probably reassuring. The most potent cause of cancerphobia is the discovery of a lump in the breast, and studies from Manchester (Aitken-Swan and Paterson, 1955) have shown that all women knowing the significance of a breast lump need reassurance and optimism to encourage them to accept early treatment. In this context public education is important and the doctor's role in that is vital.

We wish to thank all general practitioners who have referred their patients to the clinic; Dr. P. E. Thompson Hancock, the director of the department of clinical research, for his continued help and encouragement; Dr. B. Markowski for taking the cervical smears; Dr. I. M. E. Hamlin for the histological reports; Dr. B. Jameson for reading the cytology; and Mr. C. A. Simmons for his help and advice. We also wish to thank Dr. G. H. Cranswick and other medical staff who help in the well-woman clinic; Dr. J. S. Macdonald for reporting the mammograms; Dr. C. H. Jones for reporting the thermograms; Miss Wharton for technical assistance with thermography; and Miss Edwards of the department of environmental research. We also thank Nurse Penrose and the staff in the outpatient department.

REFERENCES

Aitken-Swan, J., and Paterson, R. (1955). *British Medical Journal*, 1, 623.
 Barnes, S. et al. (1968). *Lancet*, 1, 1417.
 Bilbao, M. K. (1968). *American Journal of Roentgenology, Radium Therapy and Nuclear Medicine*, 102, 933.
 Bloom, H. J. G. (1950). *British Journal of Cancer*, 4, 259.
 Boyes, D. A., Fidler, H. K., and Lock, D. R. (1962). *British Medical Journal*, 1, 203.
 Brett, G. Z. (1968). *Thorax*, 23, 414.
 Brett, G. Z. (1969). *British Medical Journal*, 4, 260.
 Brooke, B. N. (1968). *Lancet*, 2, 1289.
 Cranswick, G. H. (1967). *Practitioner*, 198, 412.

Cutler, S. J., and Connelly, R. R. (1969). *Cancer (Philadelphia)*, 23, 767.
 Draper, J. W., and Jones, C. H. (1969). *British Journal of Radiology*, 42, 401.
 Dunn, J. E. (1969). *Cancer (Philadelphia)*, 23, 775.
 Freundlich, I. M., Wallace, J. D., and Dodd, G. D. (1968). *American Journal of Roentgenology, Radium Therapy and Nuclear Medicine*, 102, 927.
 Gershon-Cohen, J., Ingleby, H., Berger, S. M., Forman, M., and Curcio, B. M. (1967). *Radiology*, 88, 663.
 Greening, W. P., and Harmer, M. (1969). *Lancet*, 1, 262.
 Gresbach, W., and Eade W. S. (1966). *Cancer (Philadelphia)*, 19, 1550.
 Hamlin, I. M. E. (1968). *British Journal of Cancer*, 22, 383.
 Isard, H. J., Ostrum, B. J., and Shilo, R. (1969). *Surgery, Gynecology and Obstetrics*, 128, 1289.
 Lawson, J. G. (1957). *Journal of Obstetrics and Gynaecology of the British Empire*, 64, 488.
 Nash, F. A., Morgan, J. M., and Tomkins, J. G. (1968). *British Medical Journal*, 2, 715.
 Phillips, A. J., Boyes, D. A. and Patterson, W. B. (1969). *U.I.C.C. Bulletin*, 7, No. 3.
 Raphael, M. (1967). *Medical Journal of Australia*, 1, 120.
 Robbins, G. F., and Berg, J. W. (1964). *Cancer (Philadelphia)*, 17, 1501.
 Stevens, G. M., and Weigen, J. F. (1966). *Cancer (Philadelphia)*, 19, 51.
 Strax, P., Venet, L., Shapiro, S., and Gross, S. M. (1967). *Cancer (Philadelphia)*, 20, 2184.
 U.I.C.C. (1969). *Bulletin*, 7, No. 3.
 Wakefield, J. (1968). In *Prognostic Factors in Breast Cancer*, edited by A. P. M. Forrest and P. B. Kunkler. Edinburgh, Livingstone.
 Whitby, L. G. (1968). *British Journal of Hospital Medicine*, 1, 79.
 Wilson, J. M. G., and Jungner, G. (1968). *Principles and Practice of Screening for Disease*. Geneva, World Health Organization.
 World Health Organization (1969). *Technical Report Series*, No. 422.

Crisis in Venereology

R. D. CATTERALL,* F.R.C.P.ED. ; R. S. MORTON,† M.B.E., F.R.C.P.ED.

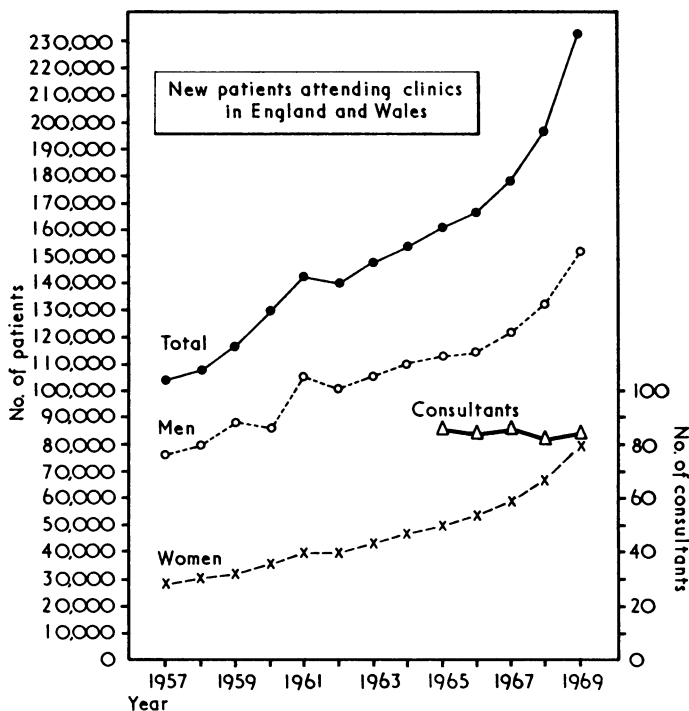
British Medical Journal, 1970, 3, 699-701

During the past 15 years one of the most unexpected and disappointing trends has been the great increase in the incidence of the venereal and other sexually transmitted diseases. This world-wide increase has been particularly marked among urban communities and in industrial countries. In many areas the services established to deal with this problem have been under great strain, and if the present increase continues they could well break down unless urgent steps are taken to modernize and reinforce them.

Venereal disease clinics were established in Britain after a royal commission which reported in 1916. After 30 years under local authority control they were incorporated into the N.H.S. in 1948. There are just over 200 clinics in England and Wales and about 20 in Scotland and Northern Ireland. Many of them are open for long hours each day in order to make it as easy as possible for those who may be infected to receive medical attention as early as possible. The premises in which most of them are housed have remained virtually unchanged since they were the responsibility of the local authorities, and several of them are badly sited in the hospitals and in relation to the other hospital services.

Between the years 1960 and 1969 the number of new patients attending the clinics in England and Wales increased by 78%. In 1960 there were 129,500 new patients and in 1969 there were more than 229,500 (Fig.). In some areas the numbers of patients have increased dramatically, especially in certain parts of the Greater London area, where nearly half the total cases in the whole of England and Wales are seen. A large proportion of these cases go to clinics in the North West Metropolitan Regional area. Despite the great increase in the number of patients, there has been no corresponding increase in the staff of the clinics or expansion of the premises—indeed, there has actually been a reduction of the senior medical establishment by more than five consultants or S.H.M.Os. during the past decade (see Table).

* President of the Medical Society for the Study of Venereal Diseases.
 † Past President of the Medical Society for the Study of Venereal Diseases.



New patients attending clinics in England and Wales 1957-1969 and numbers of consultants over the past five years (the only ones for which full figures are available).

Numbers of Doctors and Patients in V.D. Clinics—1960-1969

	1960	1965	1969
Men patients	94,729	111,627	150,808
Women patients	34,777	47,401	78,517
Total	129,506	159,028	229,325
Consultants	82	85	84
Senior registrars	No figs. available	8	8